

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:  
David Kirm and Steve H. Thorne

Serial No.: 10/524,932

Filed: January 4, 2006

For: METHODS AND COMPOSITIONS  
CONCERNING POXVIRUSES AND  
CANCER

Group Art Unit: 1648

Examiner: Unknown

Atty. Dkt. No.: KIRN:002US

Confirmation No.: 1635

**CERTIFICATE OF ELECTRONIC SUBMISSION**

DATE OF SUBMISSION: December 18, 2006

**INFORMATION DISCLOSURE STATEMENT**

**MS AMENDMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record. Copies of the listed documents required by 37 C.F.R. § 1.98(a)(2) are enclosed for the convenience of the Examiner.

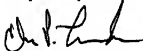
In accordance with 37 C.F.R. § 1.97(g), (h), this Information Disclosure Statement is not to be construed as a representation that a search has been made, and is not to be construed to be

an admission that the information cited is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

The present Information Disclosure Statement is being filed prior to the receipt of a first Official Action reflecting an examination on the merits, and hence is believed to be timely filed in accordance with 37 C.F.R. § 1.97(b). No fees are believed to be due in connection with the filing of this Information Disclosure Statement, however, should any fees under 37 C.F.R. § 1.16 to 1.21 be deemed necessary for any reason relating to these materials, the Commissioner is authorized to deduct the appropriate fees from Fulbright & Jaworski Deposit Account No.: 50-1212/KIRN:002US.

Applicants respectfully request that the listed documents be made of record in the present case.

Respectfully submitted,



Charles P. Landrum  
Reg. No. 46,855  
Agent for Applicants

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Date: December 18, 2006

Form PTO-1449 (modified)		Attorney Docket No. KIRN:002US	Serial No. 10/524,932
List of Patents and Publications for Applicant's		Applicant David Kirn Steve H. Thorne	
INFORMATION DISCLOSURE STATEMENT		Filing Date: January 4, 2006	Group: 1648
(Use several sheets if necessary)			
U.S. Patent Documents See Page 1	Foreign Patent Documents See Page 1	Other Art See Page 1-10	

## U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
	A1	5,151,509	09/29/92	Kowtal <i>et al.</i>	536	23.2	12/16/88
	A2	5,719,054	02/17/98	Boursnell <i>et al.</i>	435	320.1	11/08/93
	A3	5,739,169	04/14/98	Ocain <i>et al.</i>	514	658	05/31/96
	A4	5,801,005	09/01/98	Cheever <i>et al.</i>	435	7.24	03/31/95
	A5	5,824,311	10/20/98	Greene <i>et al.</i>	424	138.1	11/30/94
	A6	5,830,880	11/03/98	Sedlacek <i>et al.</i>	514	44	04/18/97
	A7	5,846,945	12/08/98	McCormick	514	44	06/07/95
	A8	5,871,740	02/16/99	Smith	424	186.1	09/26/96
	A9	6,093,700	07/25/00	Mastrangelo <i>et al.</i>	514	44	02/20/97
	A10	6,177,076	01/23/01	Lattime <i>et al.</i>	424	93.6	12/07/98
	A11	6,265,189	07/24/01	Paoletti <i>et al.</i>	435	70.1	06/02/95
	A12	6,355,252	05/12/02	Smith <i>et al.</i>	424	232.1	02/23/98

## Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	English
	B1	WO 00/73479	12/07/00	WIPO	English

## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C1	Adams <i>et al.</i> , "Clinical studies of human papilloma vaccines in pre-invasive and invasive cancer," <i>Vaccine</i> , 19(17-19):2549-56, 2001.
	C2	Alcami and Smith, "A soluble Receptor for Interleukin-1beta encoded by Vaccinia Virus: A Novel Mechanism of Virus Modulation of the Host Response to Infection," <i>Cell</i> , 71(1):153-67, 1992.

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INFORMATION DISCLOSURE STATEMENT — PTO-1449 (MODIFIED)

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	C3	Alcami and Smith, "The vaccinia virus soluble interferon-gamma receptor is a homodimer," <i>J Gen Virol.</i> , 83(Pt 3):545-9, 2002.
	C4	Alcami <i>et al.</i> , "Poxviruses: Capturing Cytokines and Chemokines," <i>Sem Virol.</i> , 5:419-427, 1998.
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	C6	Alcami <i>et al.</i> , "Vaccinia virus strains Lister, USSR and Evans express soluble and cell-surface tumour necrosis factor receptors," <i>J Gen Virol.</i> , 80(Pt 4):949-59, 1999.
	C7	Alimonti <i>et al.</i> , "TAP expression provides a general method for improving the recognition of malignant cells in vivo," <i>Nature Biotech.</i> , 18(5):515-520, 2000.
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	C10	Austin-Ward and Villaseca, "Gene therapy and its applications," <i>Rev Med Chil.</i> , 126(7):838-845, 1998.
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	C14	Blasco and Moss, "Role of cell-associated enveloped vaccinia virus in cell-to-cell spread," <i>J Virology</i> , 66(7):4170-4179, 1992.
	C15	Blasco <i>et al.</i> , "Dissociation of progeny vaccinia virus from the cell membrane is regulated by a viral envelope glycoprotein: effect of a point mutation in the lectin homology domain of the A34R gene," <i>J Virology</i> , 67(6):3319-3325, 1993.

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	C16	Bowie <i>et al.</i> , "A46R and A52R from vaccinia virus are antagonist of host IL-1 and toll-like receptor signaling," <i>Proc Natl Acad Sci USA</i> , 97(18):10162-10167, 2000.
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	C19	Burke, "Cytokines (IFNs, TNF-alpha, IL-2 and IL-12) and animal models of cancer," <i>Cytokines Cell Mol Ther</i> , 5(1):51-61, 1999.
	C20	Caragine <i>et al.</i> , "A tumor-expressed inhibitor of the early but not late complement lytic pathway enhances tumor growth in a rat model of human breast cancer," <i>Cancer Res</i> , 62(4):1110-1115, 2002.
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	C22	Christodoulides <i>et al.</i> , "Immunization with recombinant class 1 outer-membrane protein from <i>Neisseria meningitidis</i> : influence of liposomes and adjuvants on antibody avidity, recognition of native protein and the induction of a bactericidal immune response against meningococci," <i>Microbiology</i> , 144(Pt 11):3027-3037, 1998.
	C23	Colamonici <i>et al.</i> , "Vaccinia virus B18R gene encodes a type I interferon-binding protein that blocks interferon alpha transmembrane signaling," <i>J Biol Chem</i> , 270:15974-15978, 1995.
	C24	Cunnion, "Tumor necrosis factor receptors encoded by poxviruses," <i>Mol Genet Metab</i> , 67(4):278-82, 1999.
	C25	Davidson <i>et al.</i> , "Intralesional cytokine therapy in cancer: a pilot study of GM-CSF infusion in mesothelioma," <i>J Immunother</i> , 21(5):389-398, 1998.
	C26	Dobbelstein and Shenk, "Protection against apoptosis by the vaccinia virus SPI-2 (B13R) gene product," <i>J Virology</i> , 70:6479-6485, 1996.
	C27	Doehn and Jochem, "Technology evaluation: TG-1031, Transgene SA," <i>Curr Opin Mol Ther</i> , 106-111, 2000.

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	C28	Durrant and Spendlove, "Immunization against tumor cell surface complement-regulatory proteins," <i>Curr Opin Investig Drugs</i> , 2(7):959-966, 2001.
	C29	Eliopoulos <i>et al.</i> , "The control of apoptosis and drug resistance in ovarian cancer: influence of p53 and Bcl-2," <i>Oncogene</i> , 11(7):1217-1228, 1995.
	C30	Feng <i>et al.</i> , "Induction of CD8+ T-lymphocyte responses to a secreted antigen of Mycobacterium tuberculosis by an attenuated vaccinia virus," <i>Immunol Cell Biol.</i> , 79(6):569-75, 2001.
	C31	Gardner <i>et al.</i> , "Vaccinia virus semaphorin A39R is a 50-55 kDa secreted glycoprotein that affects the outcome of infection in a murine intradermal model," <i>J Gen Virol.</i> , 82(Pt 9):2083-93, 2001.
	C32	GenBank Accession Number AF216779
	C33	GenBank Accession Number AF346406
	C34	GenBank Accession Number AF349002
	C35	GenBank Accession Number AF349003
	C36	GenBank Accession Number AF349004
	C37	GenBank Accession Number AF349005
	C38	GenBank Accession Number AF349006
	C39	GenBank Accession Number AF349007
	C40	GenBank Accession Number AF349008
	C41	GenBank Accession Number AF349009
	C42	GenBank Accession Number AF349010
	C43	GenBank Accession Number AF349011
	C44	GenBank Accession Number AF349012
	C45	GenBank Accession Number AF349013
	C46	GenBank Accession Number AF349014
	C47	GenBank Accession Number AF349015

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	C48	GenBank Accession Number AF349016
	C49	GenBank Accession Number AJ269556
	C50	GenBank Accession Number AJ309297
	C51	GenBank Accession Number AJ312293
	C52	GenBank Accession Number AJ314914
	C53	GenBank Accession Number AJ314915
	C54	GenBank Accession Number AJ314916
	C55	GenBank Accession Number NC_001559
	C56	Gnant <i>et al.</i> , "Systemic administration of a recombinant vaccinia virus expressing the cytosine deaminase gene and subsequent treatment with 5-fluorocytosine leads to tumor-specific gene expression and prolongation of survival in mice," <i>Cancer Res</i> , 59(14):3396-3403, 1999.
	C57	Goebel <i>et al.</i> , "The complete DNA sequence of vaccinia virus," <i>Virology</i> , 179(1):247-266 and 517-563, 1990.
	C58	Gomella, <i>et al.</i> , "Phase I study of intravesical vaccinia virus as a vector for gene therapy of bladder cancer," <i>J Urol</i> , 166:1291-5, 2001
	C59	Graham <i>et al.</i> , "The T1/35kDa Family of Poxvirus-Secreted Proteins Bind Chemokines and Modulate Leukocyte Influx to Virus-Infected Tissues," <i>Virology</i> , 229(1):12-24, 1997.
	C60	Gross <i>et al.</i> , "BCL-2 family members and the mitochondria in apoptosis," <i>Genes Dev</i> , 13(15):1899-1911, 1999.
	C61	Hanibuchi <i>et al.</i> , "Therapeutic efficacy of mouse-human chimeric anti-ganglioside GM2 monoclonal antibody against multiple organ micrometastases of human lung cancer in NK cell-depleted SCID mice," <i>Int J Cancer</i> , 78(4):480-485, 1998.
	C62	Hawkins <i>et al.</i> , "Oncolytic biotherapy: a novel therapeutic platform," <i>Lancet Oncol</i> , 3(1):17-26, 2002.
	C63	He <i>et al.</i> , "Viral recombinant vaccines to the E6 and E7 antigens of HPV-16," <i>Virology</i> , 270(1):146-161, 2000.

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	C64	Heise <i>et al.</i> , "Efficacy of a replication-competent adenovirus (ONYX-015) following intratumoral injection: intratumoral spread and distribution effects," <i>Cancer Gene Ther</i> , 6(6):499-504, 1999.
	C65	Hellstrand <i>et al.</i> , "Histamine and cytokine therapy," <i>Acta Oncol</i> , 37(4):347-353, 1998.
	C66	Hermiston, "Gene delivery from replication-selective viruses: arming guided missiles in the war against cancer," <i>J Clin Invest</i> , 105:1169-1172, 2000.
	C67	Holzer <i>et al.</i> , "Highly efficient induction of protective immunity by a vaccinia virus vector defective in late gene expression," <i>Journal of Virology</i> , 73(6):4536-4542, 1999.
	C68	Honey <i>et al.</i> , "Chemokines: Agents for the Immunotherapy of Cancer?," <i>Nature Rev Immunol</i> , 2:175-184, 2002.
	C69	Hui and Hashimoto, "Pathways for potentiation of immunogenicity during adjuvant-assisted immunizations with Plasmodium falciparum major merozoite surface protein 1," <i>Infect Immun</i> , 66(11):5329-5336, 1998.
	C70	Ikedo <i>et al.</i> , "Oncolytic virus therapy of multiple tumors in the brain requires suppression of innate and elicited antiviral responses," <i>Nat Med</i> , 5(8):881-887, 1999.
	C71	Kantor <i>et al.</i> , "Antitumor activity and immune responses induced by a recombinant carcinoembryonic antigen-vaccinia virus vaccine," <i>J Natl Cancer Inst</i> , 84(14):1084-1091, 1992.
	C72	Kawakita <i>et al.</i> , "Poxvirus vectors for gene transfer," <i>Acta Urologica Japonica</i> , 43(11):835-838, 1997.
	C73	Kay <i>et al.</i> , "Transient immunomodulation with anti-CD40 ligand antibody and CTLA41g enhances persistence and secondary adenovirus-mediated gene transfer into mouse liver," <i>Proc Natl Acad Sci USA</i> , 97(9):4686-4691, 1997.
	C74	Kettle, "Vaccinia virus serpin B12R (SPI-2) inhibits interleukin 1-beta converting enzyme and protects virus-infected cells from TNF- and Fas-mediated apoptosis, but does not prevent IL-1-beta induced fever," <i>J. Gen. Vir.</i> , 78:677-685, 1997.
	C75	Kim <i>et al.</i> , "Replication-selective virotherapy for cancer: biological principles, risk management and future direction," <i>Nat Med</i> , 7(7):781-787, 2001.
	C76	Kim <i>et al.</i> , "The emerging fields of suicide gene therapy and virotherapy," <i>Trends Mol Med</i> , 8(4):S68-S73, 2002.

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	C77	Law <i>et al.</i> , "Antibody-sensitive and antibody-resistant cell-to-cell spread by vaccinia virus: role of the A33R protein in antibody-resistant spread," <i>J Gen Virol.</i> , 83(Pt 1):209-22, 2002.
	C78	Loparev <i>et al.</i> , "A third distinct tumor necrosis factor receptor of orthopoxviruses," <i>Proc Natl Acad Sci USA</i> , 95:3789-3791, 1998.
	C79	Marshall <i>et al.</i> , "Phase I study in advanced cancer patients of a diversified prime-and-boost vaccination protocol using recombinant vaccinia virus and recombinant nonreplicating avipox virus to elicit anti-carcinoembryonic antigen immune responses," <i>J Clin Oncol.</i> , 18(23):3964-73, 2000.
	C80	Mathew <i>et al.</i> , "A mutational analysis of the vaccinia virus B5R protein," <i>J Gen Virol.</i> , 82(Pt 5):1199-213, 2001.
	C81	McCart <i>et al.</i> , "Complex interactions between the replicating oncolytic effect and the enzyme/prodrug effect of vaccinia-mediated tumor regression," <i>Gene Ther.</i> , 7(14):1217-1223, 2000.
	C82	McCart <i>et al.</i> , "Systemic cancer therapy with a tumor-selective vaccinia virus mutant lacking thymidine kinase and vaccinia growth factor genes," <i>Cancer Res.</i> , 61:8751-8757, 2001.
	C83	McFadden and Murphy, "Host-related immunomodulators encoded by poxviruses and herpesviruses," <i>Curr Opin Microbiol.</i> , 3(4):371-8, 2000.
	C84	Moss, "Poxviridae and Their Replication," In: <i>Fields Virology</i> , Fields <i>et al.</i> (ed.), Raven Publ, New York, pp.953-985, 1996.
	C85	Mossman <i>et al.</i> , "Myxoma virus M-T7, a secreted homolog of the interferon-gamma receptor, is a critical virulence factor for the development of myxomatosis in European rabbits," <i>Virology</i> , 215(1):17-30, 1996.
	C86	Mukherjee <i>et al.</i> , "Replication-restricted vaccinia as a cytokine gene therapy vector in cancer: persistent transgene expression despite antibody generation," <i>Cancer Gene Ther.</i> , 7(5):663-670, 2000.
	C87	Mullen and Tanabe, "Virol Oncolysis 2002," <i>The Oncologist</i> , 7:106-119, 2002.
	C88	Ng <i>et al.</i> , "The vaccinia virus A41L protein is a soluble 30 kDa glycoprotein that affects virus virulence," <i>J Gen Virol.</i> , 82(Pt 9):2095-105, 2001.

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	C89	Nielsen <i>et al.</i> , "Adenovirus-mediated p53 gene therapy and paclitaxel have synergistic efficacy in models of human head and neck, ovarian, prostate, and breast cancer," <i>Clin Cancer Res</i> , 4(4):835-846, 1998.
	C90	Nielsen <i>et al.</i> , "Adenovirus-mediated p53 therapy synergizes with paclitaxel against human ovarian, mammary, prostate, head and neck, and liver cancer," <i>Cancer Gene Therapy</i> , 4(6):S12, 1997.
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	C92	Price <i>et al.</i> , "The vaccinia virus B9R protein is a 6 kDa intracellular protein that is non-essential for virus replication and virulence," <i>J Gen Virol.</i> , 83(Pt 4):873-8, 2002.
	C93	Price <i>et al.</i> , "Vaccinia virus gene B7R encodes an 18-kDa protein that is resident in the endoplasmic reticulum and affects virus virulence," <i>Virology</i> , 1:267(1):65-79, 2000.
	C94	Puhlmann <i>et al.</i> , "Vaccinia as a vector for tumor-directed gene therapy: biodistribution of a thymidine kinase-deleted mutant," <i>Cancer Gene Ther</i> , 7(1):66-73, 2000.
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	C96	Reading <i>et al.</i> , "Vaccinia virus CrmE encodes a soluble and cell surface tumor necrosis factor receptor that contributes to virus virulence," <i>Virology</i> , 292(2):285-98, 2002.
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	C99	Scholl <i>et al.</i> , "Recombinant vaccinia virus encoding human MUC1 and IL2 as immunotherapy in patients with breast cancer," <i>J Immunother</i> , 23:570-80, 2000.
	C100	Seet <i>et al.</i> , "Molecular determinants for CC-chemokine recognition by a poxvirus CC-chemokine inhibitor," <i>Proc Natl Acad Sci USA</i> , 98(16):9008-9013, 2001.

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Form PTO-1449 (modified)		Atty. Docket No. <b>KIRN:002US</b>	Serial No. <b>10/524,932</b>
List of Patents and Publications for Applicant's		Applicant <b>David Kirn</b> <b>Steve H. Thorne</b>	
INFORMATION DISCLOSURE STATEMENT		Filing Date: <b>January 4, 2006</b>	Group: <b>1648</b>
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U.S. Patent Documents <i>See Page 1</i>	Foreign Patent Documents <i>See Page 1</i>	Other Art <i>See Page 1-10</i>	

### Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C101	Siemens <i>et al.</i> , "Comparison of gene transfer and expression of viral vectors in an orthotopic murine bladder cancer model," <i>Journal of Urology</i> , 170(3):979-84, 2003..
	C102	Sinkovics and Horvath, "Newcastle disease virus (NDV): brief history of its oncolytic strains," <i>J Clin Virol</i> , 16:1-15, 2000.
	C103	Smith and Vanderplasschen, "Extracellular enveloped vaccinia virus," <i>Adv Exp Med Biol</i> , 440:395-414, 1998.
	C104	Smith <i>et al.</i> , "Ectromelia, vaccinia and cowpox viruses encode secreted interleukin-18-binding proteins," <i>J. Gen. Virol.</i> , 81:1223-1230, 2000.
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	C106	Smith <i>et al.</i> , "Vaccinia virus immune evasion," <i>Immunol Rev</i> , 159:137-154, 1997.
	C107	Smith, "Vaccinia virus immune evasion," <i>Immunol Lett</i> , 65(1-2):55-62, 1999.
	C108	Spehner <i>et al.</i> "Enveloped virus is the major virus form produced during productive infection with the modified vaccinia virus Ankara strain," <i>Virology</i> , 273(1):9-15, 2000.
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	C112	Symons <i>et al.</i> , "Vaccinia virus encodes a soluble type I interferon receptor of novel structure and broad species specificity," <i>Cell</i> , 81:551-560, 1995.
	C113	Timiryasova <i>et al.</i> , "Antitumor effect of vaccinia virus in glioma model," <i>Oncol Res</i> , 11:133-144, 1999.
	C114	Todo <i>et al.</i> , "In situ expression of soluble B7-1 in the context of oncolytic herpes simplex virus induces potent antitumor immunity," <i>Cancer Res</i> , 61:153-161, 2001.
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	C117	Upton <i>et al.</i> , "Myxoma Virus Expresses a Secreted Protein with Homology to the Tumor Necrosis Factor Receptor Gene Family That Contributes to Viral Virulence," <i>Virology</i> , 184(1):370-382, 1991.
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	C121	Weijer <i>et al.</i> , "Histopathology of tumor regression after intralesional injection of Mycobacterium bovis., 2. Comparative effects of vaccinia virus, oxazolone, and turpentine," <i>J Natl Cancer Inst</i> , 48:1697-707, 1972.
	C122	Wold <i>et al.</i> , "Adenovirus proteins that subvert host defenses," <i>Trends Microbiol</i> , 2:437-443, 1994.
	C123	Xiang <i>et al.</i> , "Blockade of interferon induction and action by the E3L double-stranded RNA binding proteins of vaccinia virus," <i>J Virol</i> , 76(10):5251-9, 2002.
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